

Location: zoom

Time: 10:00 – 11:30 am, Mondays and Thursdays

Course Instructors	Location	E-mail	Phone number
Christina Haston (CH) ¹	UBCO	christina.haston@ubc.ca	250-807-9886
Michelle Hilts (MH)	BC Cancer - Kelowna	mhilts@bccancer.bc.ca	250-712-3966 x686738
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¹Course Coordinator

Week	Date	Instructor	Assign.	Lecture number, Chapter & Title	
1	Jan 10	MH		1	Ch1; Introduction: Sig. of radiobiology & radiotherapy for cancer treatment
1	Jan 13	CH	A1 given	2	Ch2; Irradiation-induced damage and the DNA damage response
2	Jan 17	CH		3	Ch3; Cell death after irradiation: how, when and why cells die
2	Jan 20	CH		4	Ch4; Quantifying cell kill and cell survival
3	Jan 24	CH	A1 due	5	Ch14: Pathogenesis of NT
3	Jan 27	CH		6	Ch 21: Biological individualization of radiotherapy
4	Jan 31	MH	A2 given	7	Ch6; Linear energy transfer and relative biological effectiveness
4	Feb 3	MH		8	Ch7 (part)&Ch16; Biological plan evaluation & inhomogeneities
5	Feb 7	MH		9	Total-body irradiation and radiation carcinogenesis (Hall; Ch8,10)
5	Feb 10	MH		10	Fetal Irradiation & Hereditary Effects (Hall; Ch11 & 12)
6	Feb 14	ALL	A2 due	11	Student Presentations* 10:00-11:30 am
6	Feb 17	ALL		12	Student Presentations* 10:00-11:30 am
Reading Break Feb 21-25					
7	Feb 28	SZ	A3 given	13	Chs 9& 11; Fractionation, Modified fractionation
7	Mar 3	SZ		14	Ch12; Time factors in normal-tissue responses to irradiation; Repopln
8	Mar 7	SZ		15	Ch13; The dose-rate effect; Brachytherapy
8	Mar 10	SZ	A3 due	16	Ch10; The linear-quadratic approach in clinical practice
9	Mar 14	SZ		17	Radiobiological modeling in radiotherapy (Handout)
9	Mar 17	IG	A4 given	18	Ch17; Oxygen effect and therapeutic approaches to tumour hypoxia (Handout: Ch8.4-8.7)
10	Mar 21	IG		19	Ch18; Tumour microenvironment and cellular hypoxia responses
10	Mar 24	IG		20	Ch19; Combined radiotherapy and chemotherapy (Handout: Ch13.1-13.5)
11	Mar 28	IG		21	Ch20; Molecular-targeted agents for enhancing tumour response
11	Mar 31	IG	A4 due	22	Ch24; Biological response modification of normal tissue reactions

Marking Scheme

	Mark	Comments
Participation	55 %	2.5 % x 22 sessions, see below
Assignments	30 %	7.5 % x 4 assignments
Presentation	15 %	On approved topic, see below

Participation

The “in-class” component of the course is organized as a discussion session. Before each session you will be assigned reading material relevant for the session. You will also be given sample questions that may be asked of you in the discussion session. You will be responsible for understanding all the assigned reading. During each session you will be called upon to answer questions / explain concepts / draw diagrams of equipment etc. from the assigned sections for that given week. The questions asked by the instructors will form the “seeds” for the discussion sessions.

Each discussion session is worth 2.5% (i.e. 55% / 22 sessions). Marking for each session will be undertaken by the instructor leading the discussion session. Marks will be based on your level of preparation for each session, comprehension of material, and initiative in the session by way of supplementary comments and/or questions.

DISCUSSION SESSION SCORING RUBRIC					
Category	2.5	2-2.5	1.5-2	1-1.5	0
Answers Question(s) Correctly (including use of figures, etc.)	Technically flawless response to question and discussion beyond the scope of required materials, adding significant insight of relevance	Correct response and understanding of material offering some insight of relevance	Correct and satisfactory response	Acceptable response, but missing fundamental piece/point.	Unsatisfactory understanding of material and question
Contribution / Discussion (over the entire class)	Student offers relevant material and discussion beyond the scope of required material, significantly enhancing the class experience	Student offers relevant material/ideas to discussion	Student participates in discussion	Student participates in discussion only when asked	Student does not participate in discussion.

Students are expected to attend all discussion sessions and be on time. Late attendance may result in deduction in participation marks. Students are expected to abide by UVic/UBC-O attendance and absences guidelines. In the case of an excusable absence, a student(s) *may* be able to arrange for a ‘make-up session’ with the instructor no more than 4x in the course depending on instructor availability. The student(s) is responsible for organizing/arranging a make-up session. There are no ‘make-up sessions’ for a missed make-up session.

Please note that most instructors have clinical responsibilities during non-instructional times: please do not propose changes to the course times and schedule.

Assignments

There will be 4 assignments covering various topics in radiobiology. Each assignment is worth 7.5% of the total mark. Assignments will be provided by each instructor. Late assignments will be deducted 10% per day.

Presentation

A presentation involving current topics in radiobiology will be required from each student. Presentations will be held on *Feb 14 and 17, 2022*.

The presentation mark (15 %) will be based on the completeness and accuracy of the content, the breadth and scope of the literature review, the clarity in oral and visual (slides) presentation, timeliness, and the quality of responses to questions posed by the instructors and students.

PRESENTATION SCORING RUBRIC				
Completeness /Accuracy of Content	Clarity in Presentation	Question Responses	Breadth & Scope of Lit. Review	Timeliness
0 – lacked significant material expected from the title	0 – slides and presentation disorganized	0 – did not answer any questions	0 – no citations in paper	0 – over 10 minutes over their allotted presentation time
1- lacked material expected from the title	1 – either slides or presentation lacking focus	1 – answered the questions but incorrectly or insufficiently	1 –a few citations present, but didn't make connections with other findings	1 –2-10 minutes over their allotted presentation time
2 – contained relevant content but was missing a few key pieces relevant in the title	2 – slides and presentation were sufficient but presentation of material not well performed	2- answered most questions correctly, but incorrectly or insufficiently in some	2- sufficient citations, but did not logically draw connections with other findings	2 –2 minutes passed the allotted time
2.5 – contained all expected content and was accurate and relevant	2.5- slides and presentation of content clear and focused	2.5 – answered all questions correctly or sufficiently	2.5 – sufficient citations, drew logical connections with other citations	
3 – as above, but exceeded expectations	3 – slides and presentation of content exceeded expectations	3 – as above but demonstrated expertise in the subject	3 – exceeded expectations	3– presentation is within time

TOTAL MARK IS OUT OF 15.

Course Textbook:

Basic Clinical Radiobiology

Ed: Michael Joiner & Albert van der Kogel, 5th Edition, Hodder Arnold, London UK

Please order it for yourself (ex: Amazon). An additional copy is in the physics library

There will also be other reading material such as handouts and material from other texts, such as:

Radiobiology for the Radiologist

Eric Hall, 7th (2011) Lippincott Williams & Wilkins, Philadelphia PA

Another other useful (but not required) textbook is:

Applied Radiobiology and Bioeffect Planning

David R. Wigg (2000), Medical Physics Publishing, Madison WI